Ch 2, Data Analytics: Drawing Conclusions, Part 1

# What is data? p 73

1. **Describe the nature of data.**

Data is made up of facts and statistics. Raw facts have no context to them, so you cannot make much sense of them, or give them any meaning.

# What is a hypothesis?

1. **Describe what a hypothesis is.**

A hypothesis is an educated guess or a prediction that you can test in a scientific way.

1. **What are the characteristics of a reasonable hypothesis?**

Some of the characteristics of a reasonable hypothesis is that:

* It should be able to generate a testable prediction.
* It should have a specific statement identifying the variables. When a hypothesis says that one thing causes or affects another thing, the independent variable is the cause of the change and the dependent variable is the factor being affected
* It must be testable
* It needs at least some supporting evidence or observation
* It should be based on a specific observation and be limited to specific circumstances
* Evidence should be objective, not subjective
* It should not be vague or ambiguous
* It is not trivial
* It should be able to make testable predictions
* It should be no more complicated than it need be to explain an observation

1. **Can a hypothesis be proven? Distinguish between proof, support and refutation.**

A hypothesis can never be proven true with data: it can only ever be supported. However, any hypothesis can be refuted (proven to be false).